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Multiple DBR
Recorded DBR

Engineering Changes:-

A. Increased Data Rates. Present design is capable of recording data @ 300 character per second rate. This is not capable of meeting requirements of some proposed output films. We are @ 60"/minute. The SR-71 system (IR4SLR) strip camera is placing DB at a rate of 0.7" from end of one to beginning of next. which computes roughly to 1000 characters/second when reading @ 60"/minute. The limiting factor in the present design is the incremental tape recorder which will be replaced by a standard digital tape drive (25.000 characters/second rate). The same core buffer store of 1024 characters, 8 bits per character will be retained as the computer overlap capabilities can handle any overflow if reached.

A. Parity Error Print-out; The present approach checks the data for parity error. However, no provision was made to supply a hard-copy record of errors detected. The DBR will be modified to include a print-out of the block number in which the error was detected. This will be by means of an electronic counter which will be reset for each spool of film. As each block is read the counter will advance one count. Should an error be detected the contents of the counter will be sampled and fed into a high speed numerical printer. The output hard copy will simply state the DB number in which the error occurred.

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C. New Formats: The introduction of the G^{3}SI package presented a number of problems which require an extensive amount of design change - some common to both the 5" + 35 mm and some unique to the 5" alone.

35mm: - completely different geometry - overall size is larger, spacing between bits smaller, shape is rectangular rather than round. It is proposed to include optics in the Dual Head Mount which will furnish a magnification ratio converting the .032" pitch of the DB to the .018" pitch of the read head. Thusly, two mounts will be required, providing four read positions for the four type blocks to be read. An attempt is being made by breadboard to use the same read head for all formats with this introduction of an optical reduction system.

5" - Same problems with respect to geometry. Same solutions will apply. Additionally, all other formats to be read contain an index bit in line with each column of data which is used as a strobe for locating the column. In the 5" format this index bit is nonexistant. Two approaches were considered - a special head (6 month delivery plus ?? dollars) or rely on a digital incremental shaft encoder mounted directly to the drive capstan. Any speed change [illegible] compensated

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by a frequency shift in the timing pulse train. Therefore the pulse train output of the encoder will be directly proportional to the film movement and can be used to measure the distance along the film. When a pre-set distance is reached, a gate will open allowing the pulse output of the encoder to enter the counter. The counter will accumulate until a pre-selected count is reached at which time the data is dumped into the shift register for storage.

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